

ROYER, Ye.N., inzhener.

New standard designs. Avt.dor. 20 no.3:32 Mr '57. (MLRA 10:5)  
(Roads--Design)

ROYER, Ye.N.

In the Main Administration for Road Construction in the U.S.S.R.  
Avt.dor. 21 no.11:3 of cover N '58. (MIRA 11:12)  
(Roads--Design)

NEKRASOV, Vladimir Konstantinovich; RITOV, Maks Nikolayevich; ROYER,  
Yevgeniy Nikolayevich; TOVSTOLUZHSKIY, Nikolay Iosifovich;  
ZAMAKHAYEV, M.S., red.; IVANOV, S.S., red. izd-va; MAL'KOVA,  
N.V., tekhn. red.

[Handbook for the road construction technician] Spravochnik  
tekhnika-dorozhnika. Izd. 3., perer. i dop. Moskva, Nauchno-  
tekhn. izd-vo M-va avtomobil'nogo transp. i shosseinykh dorog  
RSFSR, 1960. 767 p.

(MIRA 14:5)

(Road construction)

DEDYAYEV, Sergey Ivanovich, inzh.; ROYER, Ye.N., red.; ZUBKOVA, M.S.,  
red. izd-va; BODANOVA, A.P., tekhn. red.

[Culvers made with new plastic materials] Vodopropusknye truby s  
primeneniem novykh plasticheskikh materialov. Moskva, Avto-  
transizdat, 1962. 34 p. (MIRA 15:5)  
(Culverts) (Polymers)

PSHENICHNIKOV, Sergey Nikolayevich, kand. tekhn. nauk; ROYER, Ye.N.,  
red.; GALAKTIONOVA, Ye.N., tekhn. red.

[Method of assembling reinforced concrete bridges from  
mounted units] Navesnoi sposob montazha zhelezobetonnykh  
mostov. Moskva, Avtotransizdat, 1962. 78 p. (MIRA 16:6)  
(Bridges, Concrete—Design and construction)

ANDREYEV, Oleg Vladimirovich; BOLDAKOV, Yevgeniy Vasil'yevich;  
GAYDUK, Kirill Vasil'yevich; KOSHELEV, Vyacheslav  
Aleksandrovich; RODIN, Arkadiy Ivanovich; ROYER,  
Yevgeniy Nikolayevich [deceased]; GRIGOR'YEV, Ye.N.,  
inzh., retsenzent; TRESKINSKIY, S.A., kand. geol.-mineral.  
nauk, retsenzent; GLINKA, N.N., red.; KOVRIZHNYKH, L.P.,  
red.izd-va; BODANOVA, A.P., tekhn. red.

[Concise manual on conduits and small bridges] ~~Kratkii spravochnik po trubam i malym mostam.~~ [By] O.V.Andreev i dr. Izd.3.,  
perer. Moskva, Avtotransizdat, 1963. 179 p. (MIRA 17:2)

ROYEV, G.A.

Determining the capacity of low-pressure gas pipelines made  
from flat-rolled pipes. Gaz. prom. 9 no.6:36-37 '64.  
(MIRA 17:8)

ROYEV, G.A.

Determining the profile of flat-rolled pipes depending on the  
molding pressure. Transp. i khran. nefti i nefteprod. no.4:  
14-17 '64 (MIRA 17:7)

1. Moskovskiy ordena Trudovogo Krasnogo Znameni institut nefte-  
khimicheskoy i gazovoy promyshlennosti imeni akademika Gubkina.



ROYEV, G.A.

Effect of internal pressure on pressure losses in flat-  
rolled pipelines and rubber hoses. Neft. khoz. 40 no.7:  
59-63 J1 '62. (MIRA 17:3)

11(4)

PHASE I BOOK EXPLOITATION

SOV/2389

Yablonskiy, V.S., S.A. Bobrovskiy, E.M. Bleykher, G.A. Royev, I.Kh. Khizgilov, and S.G. Shcherbakov

Avtomatizatsiya transportirovaniya i ob"yektov khraneniya nefti i nefteproduktov (Automatic Control of the Transportation and Storage of Oil and Petroleum Products) Moscow, 1958. 50 p. 1,000 copies printed.

Sponsoring Agencies: USSR. Gosudarstvennyy nauchno-tekhnicheskiy komitet, and Akademiya nauk SSSR. Vsesoyuznyy institut nauchnoy i tekhnicheskoy informatsii. Otdel nauchno-tekhnicheskoy informatsii. Sektor neftyanoy promyshlennosti.

No contributors mentioned

PURPOSE: This book is intended for automation engineers, workers, and economists of the Soviet petroleum industry.

COVERAGE: The authors discuss the extent of automation in Soviet and foreign petroleum industries and point out that automation in the Soviet Union is still in the planning stage and its introduction in industry is limited. No

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Automatic Control of the Transportation (Cont.)

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personalities are mentioned. There are 44 references: 19 Soviet and 25 English.

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Automation of tank-car and tank-truck filling	31
Automation of the filling of small containers with petroleum products	35
Remote control and regulation at docks and piers	38
Systems used in preventing petroleum product losses due to evaporation	41

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Use of radioactive isotopes in the transportation and storage of petroleum products

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AVAILABLE: Library of Congress (TP692.5.I13)

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51-4-3-7/30

AUTHORS: Royev, L.M., Filimonov, V.N. and Terenin, A.N.

TITLE: Changes in the Infrared Spectrum of Molecules on Interaction with Adsorption Centres of an Aluminium Silicate Catalyst. (Izmeneniya infrakrasnogo spektra molekul pri ikh vzaimodeystvii s tsentrami adsorptsii aluminosilikatnogo katalizatora.)

PERIODICAL: Optika i Spektroskopiya, 1958, Vol.IV, Nr.3, pp.328-334 (USSR)

ABSTRACT: The present paper forms part of a cycle of investigations on application of the infrared spectra to the study of adsorption and catalysis which was started in 1940 (Ref.1). The present paper reports measurements of the infrared absorption spectra of ammonia and acetonitrile adsorbed on an aluminium silicate catalyst and on silica gel. The aluminium silicate catalyst contained about 10% of  $Al_2O_3$  and had a specific surface area of 400  $m^2/g$ . The specific surface area for silica gel was about 500  $m^2/g$ . Both adsorbents were in the form of powders placed between two plates of LiF or NaCl. Thickness of an adsorbent layer was about 10  $mg/cm^2$ . In some tests

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Adsorption Centres of an Aluminium Silicate Catalyst. 51-4-3-7/30

porous glass plates, 0.5 mm thick, were used. These glass plates had a specific surface area of 100 m<sup>2</sup>/g. Before measurements the adsorbents were heated for 2 hours in air at 600°C and for 1 1/2 hours in 10<sup>-4</sup> mm Hg vacuum at 450°C. Adsorption of ammonia and acetonitrile vapours and recording of spectra were carried out using a vacuum cell described in Ref.9. Infrared spectrometers IKS-2 and IKS-11 with LiF and NaCl prisms were used. Fig.1 gives the absorption band of OH groups on the surfaces of the aluminium silicate catalyst (curve 1) and silica gel (2) after vacuum treatment and before adsorption of the vapours studied (both adsorbents were immersed in CCl<sub>4</sub>). Fig.2 gives the absorption spectra of the aluminium silicate catalyst (curve 1) and silica gel (2) with ammonia adsorbed on them and after immersion in CCl<sub>4</sub>. Fig.3 gives the change in the absorption spectra of the aluminium silicate catalyst on adsorption of acetonitrile; curve 1 represents the vacuum-dried adsorbent, curve 2 shows the adsorbent with acetonitrile, curve 3 shows the same adsorbent as in

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Changes in the Infrared Spectrum of Molecules on Interaction with  
Adsorption Centres of an Aluminium Silicate Catalyst.

curve 2 after evacuation of acetonitrile. Fig. 4 gives the change in the absorption spectra of porous glass on adsorption of acetonitrile; curve 1 represents the adsorbent by itself, curve 2 represents the adsorbent with acetonitrile, curve 3 represents the adsorbent of curve 2 after evacuation of acetonitrile. The results obtained show a lowering of the frequencies of the valence vibrations of  $N-H$  of ammonia and an increase of the frequency of  $C\equiv N$  of acetonitrile on adsorption. These changes in frequencies are greater in the case of adsorption on the aluminium silicate catalyst than on adsorption on silica gel. Change of the frequencies of ammonia and acetonitrile on adsorption on the aluminium silicate catalyst are similar in their sign to the changes of frequencies of the same molecules when the latter are attached to a non-protonic catalyst (such as  $AlCl_3$ ). Adsorption of molecules on carefully vacuum-treated samples of the aluminium silicate catalyst is not accompanied by attachment of the catalyst protons to the adsorbed molecules. The authors thank A.N. Sidorov for help in this work.

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51-4-3-7/30  
Changes in the Infrared Spectra of Molecules on Interaction with  
Adsorption Centres of an Aluminum Silicate Catalyst.

There are 4 figures, 1 table and 18 references, of which  
9 are Soviet, 5 American, 1 German, 1 French, 1 English  
and one translation of a Western work into Russian.

ASSOCIATION: Physics Research Institute, Leningrad State University.  
(Nauchno-issledovatel'skiy fizicheskiy institut  
Leningradskogo gosudarstvennogo universiteta.)

SUBMITTED: May 17, 1957.

1. Infrared spectra--Applications 2. Ammonia--Absorption  
--Spectrographic analysis 3. Acetonitrile--Absorption--Spec-  
trographic analysis 4. Aluminum silicate catalyst--Adsorptive  
properties 5. Silica gel--Adsorptive properties

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Корсун, Л.

TERENIN, A. and POPEL, L.

"Infrared Spectra of NO Molecules Adsorbed on Ni, Fe, Cr and their Oxides."

report submitted at the 4th International Meeting of Molecular Spectroscopy, Bologna,  
Italy, 7-12 Sept 1959.

Physical Institute of the University, Leningrad.

ROYEV, L. M. Cand Phys-Math Sci -- (diss) "Infrared spectra of molecules adsorbed on a series of oxide and metallic catalyzers." Len, 1959. 12 pp (Len Order of Lenin State Univ im A. A. Zhdanov), 200 copies (KL, 49-59, 137)

5.5310

5.2600

67154

SOV/51-7-6-8/36

AUTHORS: Royev, L.M. and Terenin, A.N.TITLE: Infrared Spectra<sup>11</sup> of Nitrogen Oxide<sup>11</sup> Adsorbed on Transition Metals<sup>11</sup>, on Their Salts and Oxides

PERIODICAL: Optika i spektroskopiya, 1959, Vol 7, No 6, pp 756-762 (USSR)

ABSTRACT: Adsorption of nitrogen oxide on transition metals, their salts and oxides was studied using their infrared absorption spectra. Nitrogen oxide was used because of the variety of ways in which it can interact with the adsorbent. It can easily lose one electron becoming thus a nitrosonium ion ( $\text{NO}^+$ ), it accepts easily one electron forming  $\text{NO}^-$  or, in its neutral state, it can form a covalent bond. Transition metals (Fe, Ni, Cr) were used in disperse state. Because of their low transparency each of these metals was deposited on the surface of a suitable carrier such as alumina gel (which has high specific surface area of  $300 \text{ m}^2/\text{g}$  and is transparent in a wide range of infrared frequencies). Carbonyl of the appropriate metal was adsorbed on alumina gel and subsequently thermally reduced to metal (at  $\sim 150^\circ \text{C}$ ). Transition-metal salts were also deposited on alumina gel by immersing the latter in the appropriate salt solution for 5-10 hours, with subsequent drying at  $\sim 100^\circ \text{C}$ . Iron and chromium oxides were produced in gel-like form with specific surface area of  $\sim 100 \text{ m}^2/\text{g}$ . Nickel oxide, freshly prepared

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SOV/51-7-6-8/38

## Infrared Spectra of Nitrogen Oxide Adsorbed on Transition Metals, on Their Salts and Oxides

by thermal decomposition of  $\text{Ni}(\text{NO}_3)_2$ , also had sufficiently large specific surface area. All these samples were deposited on fluorite plates. Measurements were made in the region  $1000-2300 \text{ cm}^{-1}$  using an IKS-11 spectrometer with an NaCl prism. Before measurements samples were kept at  $\sim 150^\circ\text{C}$  for several hours in  $5 \times 10^{-5} \text{ mm Hg}$  vacuum. Then the samples were cooled, their spectra (without NO) were recorded, NO was adsorbed at  $\sim 20^\circ\text{C}$  and 20 mm Hg or other pressures, and the spectra were again recorded. Some of the results obtained are given in Figs 1-6. The infrared absorption spectrum of NO adsorbed on iron is shown in Fig 1; the spectra of NO adsorbed on nickel (curve 1) and chromium (curve 2), are given in Fig 2. The spectrum of NO adsorbed on iron oxide gel is shown in Fig 3 and the effect of oxygen on the latter spectrum is illustrated in Fig 4. The spectra of gaseous NO and of NO adsorbed on  $\text{SiO}_2$ ,  $\text{Al}_2\text{O}_3$ ,  $\text{NiO}$ ,  $\text{Fe}_2\text{O}_3$  and  $\text{Cr}_2\text{O}_3$  are shown schematically in Fig 5. The spectra of NO adsorbed on  $\text{Mn}^{++}$ ,  $\text{Co}^{++}$ ,  $\text{Fe}^{++}$ ,  $\text{Mn}^{++}$  and  $\text{Cr}^{+++}$  salts are given in schematic form in Fig 6. The d-shell configuration of the appropriate metal ion is shown on the right of Fig 6. These results show that gaseous nitrogen oxide has an absorption band at  $1875 \text{ cm}^{-1}$ . On formation of nitrosonium ions ( $\text{NO}^+$ ) the frequency of this band is displaced towards

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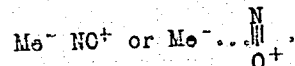
shorter wavelengths. Such a displacement indicates one of the following types of binding between NO and the adsorbent surface:

- 1)  $\text{Me}^-\text{NO}^+$  (ionic binding),
- 2)  $\text{Me}^-\dots\overset{\text{N}}{\underset{\text{O}^+}{\parallel\parallel\parallel}}$  or  $\text{Me}^-\text{:N}\equiv\text{O}^+$ .

Formation of a covalent bond between NO and the surface may mean one of the following types of binding:

- 1)  $\text{Me}-\text{N}=\text{O}$ , 2)  $\text{Me}^--\text{N}^+=\text{O}$ , 3)  $\text{Me}:\text{NO}$ .

In this case the frequencies lie between 1870 and 1700  $\text{cm}^{-1}$ . When  $\text{NO}^-$  ions are formed the vibrational frequency is displaced into the region from 1000 to 1100  $\text{cm}^{-1}$ ; no absorption bands were observed in this region. The above information was used to interpret the results obtained on transition metals, their salts and oxides. It was found that adsorption of NO on iron involves the following types of binding:



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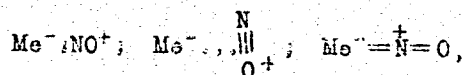
In the case of nickel adsorbed NO forms covalent bonds, while in the

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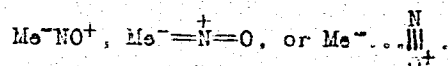
Infrared Spectra of Nitrogen Oxide Adsorbed on Transition Metals, on Their Salts and Oxides

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case of chromium binding may have one of the following forms:



or covalent bonds  $\text{Me}-\text{N}=\text{O}$  may be formed. NO is adsorbed on oxides at adsorption centres which include oxygen and metal ions. The latter may form covalent or donor bonds with NO molecules. The nature of the spectra of NO adsorbed on salts is governed primarily by the circumstance whether the number of d-electrons of the metal ion is even or odd. If the number of these electrons is even a covalent bond  $\text{Me}:\text{NO}$  is formed. If this number is odd then one of the following types of binding may occur:



There are 6 figures and 10 references, 2 of which are Soviet and 8 English.

SUBMITTED: June 18, 1959.

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5(4), 24(7)

SOV/20-124-2-37/71

AUTHORS:

Royev, L. M., Terenin, A. N., Academician

TITLE:

The Infrared Spectra of Water, Ethanol, and Methanol Adsorbed on Chromic Oxide (Infra-krasnyye spektry vody, etanola i metanola, adsorbirovannykh na okisi khroma)

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 124, Nr 2, pp 373-376 (USSR)

ABSTRACT:

The authors endeavor to find the mechanism of the decomposition of alcohols on  $\text{Cr}_2\text{O}_3$ . The oxides of transition metals (above all  $\text{Cr}_2\text{O}_3$  and  $\text{Fe}_2\text{O}_3$ ) are of particular interest because on their surface the existence of several catalytically active centers may be assumed. The  $\text{Cr}_2\text{O}_3$ -preparation was produced by annealing a thin layer of ammonium bichromate. This  $\text{Cr}_2\text{O}_3$  is catalytically active in a decomposition of alcohols and had a large specific surface ( $176 \text{ m}^2/\text{g}$ ). The  $\text{Cr}_2\text{O}_3$ -powder was pressed between plates of NaCl. The heat treatment of the surface of the samples is described in short. The spectrum was recorded by

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means of a spectrometer IKS-11 with an NaCl-prism, and the spectral curves of the transmitted radiation are given by a diagram. The spectral range of  $800 - 1700 \text{ cm}^{-1}$  was investigated.  $\text{H}_2\text{O}$  was investigated at  $20^\circ$  at a steam pressure of 4 mm.

A diagram shows the spectrum of  $\text{Cr}_2\text{O}_3$  after adsorption. Within the range of  $800 - 1700 \text{ cm}^{-1}$  the following absorption bands occur: 1645; 1492; 1336; 1180; 1042; 936;  $850 \text{ cm}^{-1}$ . Besides these bands with sharply marked maxima there is a common background within the entire investigated range of  $800 - 1700 \text{ cm}^{-1}$ .

The broad and intense absorption band at  $1645 \text{ cm}^{-1}$  belongs to the capillarily condensed phase of water. The bands 1492, 1336 and  $1180 \text{ cm}^{-1}$  are apparently caused by the  $\text{H}_2\text{O}$  molecules adsorbed on  $\text{Cr}_2\text{O}_3$ . The bands 1042, 936 and  $850 \text{ cm}^{-1}$  are to be ascribed to the OH-groups, which are connected with the sur-

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The Infrared Spectra of Water, Ethanol, and Methanol Adsorbed on Chromic Oxide

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face-structure of  $\text{Cr}_2\text{O}_3$ . The existence of many bands in the adsorption of  $\text{H}_2\text{O}$  indicates the existence of several types of adsorption centers on the surface of the  $\text{Cr}_2\text{O}_3$ . The ethanol vapors were adsorbed at a pressure of 40 mm at the temperatures of 20 and 150° on  $\text{Cr}_2\text{O}_3$ . The bands 1645, 1336, 942, and 859 agree tolerably well with the bands found in the adsorption of  $\text{H}_2\text{O}$  on  $\text{Cr}_2\text{O}_3$ . The creation mechanism of individual bands is described in short. In a similar manner the adsorption of methanol is described. Interpretation of the spectra permits the following conclusions to be drawn: Already at 20° the adsorption of alcohols on  $\text{Cr}_2\text{O}_3$  is accompanied by the following processes: a) splitting-off of  $\text{H}_2\text{O}$  molecules and OH-groups from the molecules of alcohol and formation of an unsaturated compound. b) splitting-off of hydrogen and formation on the surface of compounds of the type  $\text{Cr} - \text{O} - \overset{\textstyle |}{\underset{\textstyle |}{\text{C}}} -$  (in the case of

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methanol) and  $\text{Cr} - \text{O} - \overset{\textstyle |}{\underset{\textstyle |}{\text{C}}} - \overset{\textstyle |}{\underset{\textstyle |}{\text{C}}} -$  (in the case of ethanol). There are 4 figures and 12 references, 7 of which are Soviet.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet im. A. A. Zhdanova  
(Leningrad State University imeni A. A. Zhdanov)

SUBMITTED: October 6, 1958

Card 4/4

L 23098-66 EWT(1)/ETG(f)/EPF(n)-2/ENG(m) IJP(c) AT

ACC NR: AP6007077

UR/0057/66/036/002/0294/0296

AUTHOR: Andrezen, A.B.; Gordiyenko, V.P.; Dubovoy, L.V. / Royfe, I.M. / Yakovlev, S.P.

ORG: None

TITLE: Dynamic stabilization of a direct discharge in a magnetic field

SOURCE: Zhurnal tekhnicheskoy fiziki, v.36, no.2, 1966, 294-296

TOPIC TAGS: gas discharge plasma, positive column, plasma magnetic field, hydrogen plasma, helium, argon, plasma instability, electric field, medium frequency

ABSTRACT: The authors have investigated the stabilizing effect of a high frequency (0.8 MHz) electric field on a high current (up to 12 kA) pulsed gas discharge in a longitudinal magnetic field. The discharges took place in a 10 cm diameter 100 cm long quartz tube containing hydrogen at pressures from  $10^{-2}$  to  $10^{-4}$  mm Hg. The diameter of the discharge column was limited to 4 cm by glass septa located close to the electrodes and containing circular openings. The duration of the current pulses was 0.5 millisecc. The magnetic field (up to 10 kOe) was also pulsed, but as its period was 15 millisecc, the magnetic field was practically constant during the discharge. The high frequency electric field was provided by a pulsed oscillator and could be made strong enough to give rise to an alternating current of 8 kA in the discharge column. The stability of the discharge was investigated with the aid of high speed photography, a magnetic probe, and a collimated photomultiplier. The discharges were found to be

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UDC:533.9

ACC NR: AP6007077

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highly unstable; many harmonics of the helical instability with a fundamental frequency of about 40 kHz were observed. The instability was greatly influenced by the strengths of the magnetic field and the discharge current, and particularly by the location of the glass septa limiting the diameter of the discharge column. The high frequency electric field was observed to exert a stabilizing influence, but this stabilizing influence was marked only when the high frequency component of the current in the discharge column was comparable with or greater than the direct component. The ratio of the high frequency to the direct component of the current required to effect a given degree of stabilization was the smaller, the higher the discharge current. Experiments with helium or argon in place of hydrogen gave similar results. It is concluded that the stabilization of the current-conventive instability of a positive column in a magnetic field, predicted by the current semiquantitative theory, is confirmed by the present experiments. The authors thank S.M.Osovets for his interest in the work and mention that S.N.Boyko, B.A.Stekol'nikov, and S.P.Dimitriyev participated in the construction of the apparatus. Orig. art. has: 2 figures.

SUB CODE: 20

SUBM DATE: 12Jul65

ORIG. REF: 005

OTH REF: 000

Card

2/2

UVR

(7)

AUTHORS: Royev, L. M., Terenin, A. N.,  
Academician

SOV/20-125-13/65

TITLE: The Infrared Spectra of Nitrogen Acid in the State of Adsorption on the Oxides of Iron and Chrome (Infra-krasnyye spektry okisi azota v sostoyanii adsorbitsii na okisnyakh zheleza i khroma)

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 125, Nr 3, pp 543-550 (USSR)

ABSTRACT: In the present paper the authors investigated the infrared adsorption spectra of NO on oxides of iron and chrome in order to detect the presence of electron-acceptor-centers on their surface. A spectral criterion (the variation of the frequency of the infrared adsorption band of the NO-molecule) was used for this purpose. The powdered adsorbents were applied to a plate of  $\text{CaF}_2$ . Also the further treatment of the samples and the preparation of NO are discussed. The adsorption of NO on  $\text{Fe}_2\text{O}_3$ : The gases were adsorbed at 20° and 150°, and the authors found no differences in the spectra. The first diagram shows

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The Infrared Spectra of Nitrogen Acid in the  
State of Adsorption on the Oxides of Iron and Chrome

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the infrared spectrum of NO-molecules adsorbed on ferrigel. At the used pressure of 30 mm and at the used thickness of the vessel, a spectrum of gaseous NO is not visible. An increase of the contact time of the gas exerts no influence upon the number of bands, but increases the intensity of the bands 1865, 1806, and 1770  $\text{cm}^{-1}$ . Further details are discussed in short.

The bands 1865 and 1770  $\text{cm}^{-1}$  can be ascribed to liquid NO in which also the dimers  $\text{N}_2\text{O}_2$  are visible. The second diagram

shows the changes of the spectra of adsorbed NO-molecules which are caused by the introduction of oxygen. The bands 1700, 1665, and 1625  $\text{cm}^{-1}$  of strongly chemisorbed NO-molecules evidently can be ascribed to the formation of a covalent bond with the oxygen atoms of the adsorbent. The bands 1806

and 1738  $\text{cm}^{-1}$  (which are shifted toward the long-wave range with respect to the gas) have to be ascribed to the NO-molecules which entered a covalent or coordination bond with the iron atoms on the surface. The authors then discuss the adsorption of NO on  $\text{Cr}_2\text{O}_3$ . Some bands of this spectrum may be compared with the bands observed in the case of ferrigel.

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The Infrared Spectra of Nitrogen Acid in the  
State of Adsorption on the Oxides of Iron and Chrome

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The individual bands are discussed in detail. No bands of adsorbed molecules could be detected in the range 1000-1200  $\text{cm}^{-1}$ . Finally, the authors draw some conclusions: In the case of adsorption of NO on the oxides of iron and chrome, there are three kinds of adsorbed centers which are characterized by different amounts and directions of the infrared adsorption band with respect to the gas. In the centers of the first type, eventually, there is a covalent bond with the metal atoms. In the centers of the second type, however, donor bonds are formed and the state of the NO-molecule approaches the electron configuration of  $\text{NO}^+$ . These centers obviously belong to the metal ions. The third type of adsorption centers is caused by oxygen atoms which form a strong covalent bond with NO. There are 3 figures and 7 references, 2 of which are Soviet.

ASSOCIATION: Leningradskiy gosudarstvennyy universitet im. A. A. Zhdanova  
(Leningrad State University imeni A. A. Zhdanov)

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USDA

BALANDIN, Aleksey A. - "On the theory of contact catalysis of hydrogenation and isomerization reactions" (Section I)  
 BELYKH, Georgiy A., and VASILYEV, A. A. - "Mechanism of isotope exchange of hydrogen compounds" (Section I)  
 EDEL, S. (Probably Yakov S. EDEL) - "On the role of intermediate surface forms in some heterogeneous-catalytic reactions of carbon monoxide and olefins" (Section I)  
 FETULIN, Lev Kh., and OBEREDOV, V. I. - "Catalytic transformation of cyclohexene and copper and the multiplet theory" (Section II)  
 MANDELSTAM, Yanf G., and GUSEV, M. M. - "Chlorocarbon manufacture by chlorination of alkanes in the fluid bed of a catalyst" (Section II)  
 KIMANOV, L. A. - "Specific aspects of the mechanism of catalysis by complex compounds" (Section II)  
 KISHINEVA, N. I., KALASHNIK, V. A., and VOYTOVSKIY, V. V. - "Investigation of heterogeneous catalysts by electron spin resonance" (Section II)  
 PRIZOV, A. D. - "On the catalytic synthesis of organosilicon compounds" (Section III)  
 ROZENTH, Simon Z. - "Electronic effects in catalysis" (Section I or II)  
 RUBINSKIY, A. M. - "The structure and texture of chromia-alumina-potassium oxide catalysts" (Section II)  
 SHUKH, I. I., and BELITSKIY, I. P. - "Catalytic transformations in the furanolic compound group" (Section III)  
 SOBELSKIY, D. V., and SHUMOVA, V. P. - "Kinetic and mechanism of catalytic reduction in aromatic nitro derivatives" (Section I)  
 TIKHONOV, A. N., and REYEV, A. P. - "Active sites on transition metal catalysts, revealed in the infrared spectrum of adsorbed CO" (Section II)  
 TUPCHENKO, E. V., ANTIPINA, T. V., and LEE HUI SHENG (Possibly Li Hui-sheng, Moscow Textile Institute) - "The effects of structural characteristics of porous catalysts on activity and kinetic behavior of heterogeneous-catalytic reactions" (Section I)  
 VOLKOVSKIY, T. - "General ideas on the electronic theory in catalysis on semiconductors" (Section I)  
 YEREMEV, B. V., and KIKODKOVA, N. P. - "Catalytic transformation of cyclohexene and copper and the multiplet theory" (Section II)

reports to be presented at the 2nd Intl Congress on Catalysis, Paris, France, 8-9-Jul '60.



Royev, L. M.

S/020/60/133/03/05/013  
B019/B056

AUTHOR:

Royev, L. M.

TITLE:

Broad Absorption Bands in Infrared Spectra<sup>21</sup> of Adsorbed Molecules

PERIODICAL:

Doklady Akademii nauk SSSR, 1960, Vol. 133, No. 3,  
pp. 561 - 563

TEXT: In the introduction, the decrease of the transparency of a number of adsorbents found by the author et al. within the infrared when vapor of the adsorbed substance is let into the sample containers, is discussed. The formation of the absorption background in a large number of adsorbents is dealt with. From the spectra obtained the author concludes that the background intensity depends on the boiling temperature of the adsorbed substance. The higher the boiling temperature, the greater is the background intensity. For explaining this effect experiments were carried out with samples having temperatures between -160 to +100°C. It was found that the character of the background does not depend on the adsorption temperature, but that the background intensity increases with

Card 1/3

Broad Absorption Bands in Infrared Spectra  
of Adsorbed Molecules

S/020/60/133/03/05/013  
B019/B056

temperature drop. From a comparison of background maxima with the absorption spectra of the adsorbent and the adsorbed molecules the author draws the conclusion that the background may be considered to be a very large broadening of the absorption bands of the adsorbent and the adsorbed molecules. Finally, the effect described is explained with the help of the photodesorption of the molecules by infrared light. The energy transfer of the molecules is accompanied by a transition of the molecules to a lower vibrational level without radiation. This leads to a decrease of the lifetime in the excited state and, thus, to a broadening of a given energy level. In the infrared this causes a broadening of the absorption bands. This explanation is given as not being definite and final. In conclusion, the author thanks Academician A. N. Terenin for his help in carrying out the present investigation. There are 4 figures and 1 Soviet reference.

ASSOCIATION: Fizicheskiy institut Leningradskogo gosudarstvennogo universiteta im. A. A. Zhdanova (Institute of Physics of Leningrad State University imeni A. A. Zhdanov) ✓

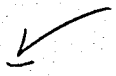
Card 2/3

Broad Absorption Bands in Infrared Spectra  
of Adsorbed Molecules

S/020/60/133/03/05/013  
B019/B056

PRESENTED: March 18, 1960, by A. N. Terenin, Academician

SUBMITTED: February 5, 1960



Card 3/3

PRIKHOT'KO, G.F., kand. geograf. nauk; ROYEV, L.M., kand. fiz.-mat. nauk;  
TOVBIN, M.V., doktor khim. nauk, prof.

Using monomolecular films for fighting steam fog. Meteor. i gidrol.  
no.11:27-29 N '64. (MIRA 17:12)

1. Ukrainskiy nauchno-issledovatel'skiy gidrometeorologicheskii  
institut.

FROSH, L.M.; ROYEV, L.M.

Radiation cooling of a turbid air layer. Geofiz. i astron.  
no.8:106-108 '66.

(MIRA 1961)

1. Ukrainskiy nauchno-issledovatel'skiy gidrometeorologicheskii  
institut.

PROKH, I.B.; ROYEV, I.M.

Origin of a thin layer of lifted night fog. Trudy Ul'-NIGME no.48:96-  
100 '65. (MIRA 18:8)

ODRIN, V.M., KACHKUROVA, I.Ya., ROYEV, L.M., KORNEYCHUK, G.P.

Interaction between a vanadium oxide catalyst and ~~naphthalene~~-air mixture  
in the course of catalysis as studied by infrared spectroscopy. Dokl.  
AN SSSR 163 no.2:410-413 J1 '65. (MIRA 18:7)

I. Institut fizicheskoy khimii im. L.V.Pisarzhevskogo AN UkrSSR.  
Submitted November 3, 1964.

VDOVENKO, L.I.; ROYEV, L.M.

Effect of surface-active agents on the evaporation velocity of drops  
of a solution and the condensation of water vapor on them. Trudy UkrNIGMI  
no.47:17-21 '65.  
(MIRA 18:7)



L 12458-65 EWT(1)/EWT(m)/FCC P1-4 GW  
ACCESSION NR: AP4047801

S/0050/64/000/011/0027/0029

AUTHOR: Prikhot'ko, G. F. (Candidate of geographical sciences); Royev, L. M. (Candidate of physicomathematical sciences); Tovbin, M. V. (Doctor of chemical sciences, Professor)

TITLE: Use of monomolecular films in combatting evaporation-type fogs

SOURCE: Meteorologiya i gidrologiya, no. 11, 1964, 27-29

TOPIC TAGS: fog, evaporation fog, fog dispersion, weather control, surface active film, hexadecanol

ABSTRACT: A study was conducted of the effect of monomolecular films on the rate of evaporation of water at low temperatures (0 and 20C) to devise a method of combatting evaporation-type fogs by using surface-active reagents to reduce the rate of evaporation from the surface of a body of water. It was found that the efficiency of hexadecanol film in reducing evaporation is greater at low temperatures than at high temperatures. It is estimated that 500-1000 kg of the reagent would be required to disperse fog in the port of Murmansk.

Card 1/2

L 12458-65

ACCESSION NR: AP4047801

Orig. art. has: 2 tables and 6 formulas.

ASSOCIATION: Ukrainskiy nauchno-issledovatel'skiy gidrometeorologicheskii institut (Ukrainian Scientific Research Hydrometeorological Institute)

SUBMITTED: 07Feb64

ENCL: 00

SUB CODE: ES

NO REF SOV: 002

OTHER: 000

ATD PRESS: 3125

Card 2/2

27742

S/058/61/000/007/022/086  
A001/A101

9,4177 (1035)

AUTHOR: Royev, L.M.

TITLE: Anomalous broadening of absorption bands of adsorbed molecules in infrared region

PERIODICAL: Referativnyy zhurnal.-Fizika, no. 7, 1961, 137, abstract 7V279  
("Dokl. i soobshch. Uzhgorodsk. un-t. Ser. Fiz.-matem. n.", 1960, no. 3, 35 - 36)

TEXT: It was discovered that transparency of adsorbents,  $\text{SiO}_2$ ,  $\text{Al}_2\text{O}_3$ ,  $\text{MgO}$ ,  $\text{Cr}_2\text{O}_3$  decreases in the infrared region of spectrum at adsorption of  $\text{H}_2\text{O}$ ,  $\text{CCl}_4$ ,  $\text{CHCl}_3$ ,  $\text{CH}_3\text{CN}$ ,  $\text{NH}_3$ ,  $\text{CO}$ ,  $\text{NO}$ ,  $\text{CH}_3\text{OH}$ , pyridine, nitrobenzene, cyclohexane, and other compounds. The intensity of the absorption background formed at adsorption depends on the wavelength in spectrum, and peaks of the background coincide with the peaks of the absorption bands either of adsorbents or adsorbed molecules. The spectrum region in which transparency of adsorbents decreases exceeds considerably the half-width of absorption bands of adsorbed molecules, attaining sometimes  $1,500 - 2,000 \text{ cm}^{-1}$ . Absorption background formed at adsorption is considered as a very large broadening of absorption bands of adsorbents or ad-

Card 1/2

27742

S/058/61/000/007/022/086  
A001/A101

Anomalous broadening ...

sorbed molecules arising at photodesorption of molecules under action of infra-red radiation. Photodesorption leads to reduction in the life time of adsorbed molecules in an excited vibrational state and, consequently, to broadening of the corresponding vibrational level. Not all absorption bands of adsorbed molecules undergo broadening, but only those in which the corresponding energy of vibration exceeds the adsorption energy of a molecule on a given adsorbent.

A.S.

[Abstracter's note: Complete translation]

Card 2/2

ROYEV, L.M.; TERENIN, A.N.

Infrared spectra of nitric oxide adsorbed on transition metals,  
their salts, and oxides. Opt. i spektr. 7 no. 6:756-762 D 199.  
(MIRA 14:2)

(Nitrogen oxide---Spectra)

ROESLER, F. C.

BA 81 10

The "capillary hydrodynamics" [fluid mixing eddies] of H. Jebsen-Marwedel. W. Jebsen-Marwedel and F. C. Roesler (*Kolloid-Zentr.*, 1951, 123, 2-11).—Jebsen-Marwedel (*ibid.* 1948, 11, 46) described the formation of eddies, persisting for several sec., when certain pairs of miscible liquids are allowed to mix. The empirical equation  $x = (\rho_1 - \rho_2) (\sigma_1 - \sigma_2) < 0$ , where  $\sigma_1, \sigma_2$  are surface tensions, has been confirmed for a no. of pairs of pure liquids and mixtures, provided a third phase, either air or water, is present above. But for liquids floating on water in the absence of air,  $x$  must be  $> 0$ . The phenomenon occurs when surface tension causes the denser liquid to spread over the other, and gravity then causes the film to sink in the form of droplets. Diffusion ultimately brings about complete mixing after a time dependent on the  $\eta$ .

A. B. DENSHAM.

ROYER, N. V.

Kholodnoe Volochenie Stalnykh Trub (Cold Drawing of Steel Tubes), 214 p., Moscow  
and Leningrad, 1950

ROYEV, V.I.

Determining the maximum permissible load in rod systems by the shifting method. Izv. vys. uch. zav.; stroi. i arkhitekt. 5 no. 4: 53-60 '62. (MIRA 15:9)

1. Novosibirskiy inzhenerno-stroitel'nyy institut imeni Kuybysheva.  
(Elastic rods and wires)



VOLOBUYEV, V.I.; BIDA, L.S.; KUKUSHKINA, G.Ye.; NENARTOVICH, L.V.;  
KALMYKOVA, Zh.I.; KAS'YANENKO, S.I.; IYEVLEVA, L.A.; ROYEVA,  
Zh.M.; Primali uchastiye: KHMELIK, A.I.; VOSKANYAN, A.O.;  
SHAPOVALOVA, L.P.

New wholesale prices for cast iron, blast furnace ferroalloys,  
open-hearth and converter steel. Sbor.trud. UNIIM no.11:131-137  
'65. (MIRA 18:11)

BERLIN, S.S.; DOROSHENKO, L.A.; VORONOVA, L.A.; NEVEROVSKA, V.O.  
[Nevierovska, V.O.]; ROYF, M.M.

Proposals of efficiency promoters. Leh. prom. no.2:63-65  
Ap-Je '63. (MIRA 16:7)

(Technological innovations)

VASYUTENKAYA, A.V. [Vasiutyns'ka, A.V.]; NEVEROVSKAYA, V.O. [Neviarovs'ka,  
V.O.]; KOPY, M.M.

Proposals of the efficiency promoters of the Knit Goods Factory  
No.1 in Chernovtsy. Lel. prom. no.3:71 J1-S '65. (MIRA 18:9)

NEVEROVSKAYA, V.O. [Nevierova'ka, V.O.]; NIKOLAYENKO, T.A. [Nykolaenko, T.O.];  
ROYF, M.M.

New method for cutting garments. Leh.prom. no.4:45-46 O-D '62.  
(MIRA 16:5)

1. Chernovitskaya trikotazhnaya fabrika No.1.  
(Knit goods industry) (Garment cutting)

BOYKO, S.P.; BARABASH, L.Z.; GERASIMOV, A.B.; DMITRIYEV, S.P.;  
ZHERAVOV, V.G.; ROYFE, I.M.; STEKOL'NIKOV, B.A.

Voltage supply to the deflecting and blanking plates in the  
system of injection of the ion beam into the chamber of a  
proton synchrotron. Prib. i tekhn. eksp. 7 no.4:76-80 J1-Ag '62.  
(MIRA 16:4)

1. Institut teoreticheskoy i eksperimental'noy fiziki Gosu-  
darstvennogo komiteta po ispol'zovaniyu atomnoy energii SSSR  
i Nauchno-issledovatel'skiy institut elektrofizicheskoy  
apparatury Gosudarstvennogo komiteta po ispol'zovaniyu  
atomnoy energii SSSR.  
(Synchrotron)

L 59241-65 EWT(m)/EPA(w)-2/EWA(m)-2 Pt-7 IJP(c) GS

ACCESSION NR: AT5007937

S/0000/64/000/000/0507/0512

AUTHOR: Abroyan, M. A.; Gerasimov, V. P.; Zheleznikov, F. G.; Zablotskaya, G. R.;  
Ivanov, N. F.; Ivlev, A. V.; Komarov, V. L.; Kuznetsov, V. S.; Latmanizova, G. M.;  
Royfe, I. M.; Solnyshkov, A. I.

TITLE: High-current injector of a linear accelerator with strong focusing

SOURCE: International Conference on High Energy Accelerators. Dubna, 1963. Trudy.  
Moscow, Atomizdat, 1964, 507-512

TOPIC TAGS: linear accelerator, strong focusing accelerator, electron optics

ABSTRACT: Conditions governing injection in linear proton accelerators determined the requirements on the ion beam, which were of the following order: energy, 700 kev; beam current, 400 milliamperes; beam diameter, 10 millimeters; pulse duration, 10-15 microseconds; energy stability, 0.5%; angular divergence,  $\pm 5 \cdot 10^{-3}$  radian. The principal difficulties occur in the development of a system for producing and forming an ion beam with a large current from a powerful stabilized high-voltage source. For particle energy of 700 kev, a variation of the open machine is chosen which ensures good operational characteristics. In the case of large currents, the effect of the beam's spatial charge is substantial and must be taken into account. It

Cord 1/3

L 59241-65

ACCESSION NR: AT5007937

3  
considerably complicates the design of the ion-optical system. Experimental testing of the selected version of the optical system for a proton beam with a current of the order of 0.5 ampere confirmed the correctness of the theoretical conclusions and indicated the possibility of producing a proton injector with the above parameters. The author discusses the following topics: design of a system for forming the beam; the experimental setup (injector power supply, high-voltage stabilized power supply circuit, ion source, and current characteristics); the results of the measurements (e.g. current density distribution over tube cross-section). "In conclusion, the author thanks I. F. Malyshev for his constant interest and cooperation during the work, and also R. P. Zaytseva for doing the computer calculations." Orig. art. has: 8 figures.

ASSOCIATION: Nauchno-issledovatel'skiy institut elektrofizicheskoy apparatury imeni D. V. Yefremova GKAE SSSR (Scientific-Research Institute of Electrophysical Equipment, GKAE SSSR)

Cord 2/3

L 59241-65

ACCESSION NR: AT5007937

SUBMITTED: 26May64

ENCL: 00

SUB CODE: NP

NO REF SOV: 003

OTHER: 002

*llc*  
Card 3/3



ROYFE, I. M.

h07h6

S/120/62/000/004/012/047  
EO39/E420

751  
AUTHORS: Boyko, S.N., Barabash, L.Z., Gerasimov, A.B.,  
Dmitriyev, S.P., Zheravov, V.G., Royfe, I.M.,  
Stekol'nikov, B.A.

TITLE: Voltage supplies of the deflection and beam  
suppression plates of the ion-beam-input system  
of the proton synchrotron chamber

PERIODICAL: Pribury i tekhnika eksperimenta, no.4, 1962, 76-80

TEXT: For the accurate injection of the beam into the  
acceleration chamber the correct magnitude and sequence of  
voltages must be applied to the three pairs of deflector and  
suppressor plates or condensers described in the previous abstract  
(70-75, of the present journal). The form and values of the  
voltage on the deflector and suppressor plates is shown in Fig.1.  
The voltage to the plates is supplied from an H.T. unit of  
 $\pm 42$  kV stable to better than  $\pm 0.2\%$  per day. As the beam orbit  
passes between the third pair of deflector plates the residual  
voltage on the plates after injection must be reduced to less than  
 $\pm 0.3$  kV after  $1.5 \mu$  sec from the end of the voltage pulse.  
A block diagram of the H.T. unit is given, the switching being  
Card 1/3

Voltage supplies of the deflection ... S/120/62/000/004/012/047  
E039/E420

accomplished by means of thyratrons, the trigger voltage of which determines the residual voltage. The latter is reduced further by means of a compensating circuit to not more than 100 V during the 1.5  $\mu$  sec after the end of the voltage pulse and decays in a period of 5 to 7  $\mu$  sec. The value of the residual voltage on the suppressor plates must not exceed 150 V for a suppression potential of 30 kV. Block diagrams of the circuits are given. There are 7 figures. ✓

ASSOCIATIONS: Institut teoreticheskoy i eksperimental'noy fiziki GKAE (Institute of Theoretical and Experimental Physics GKAE)  
Nauchno-issledovatel'skiy institut elektrofizicheskoy apparatury GKAE (Scientific Research Institute for Electrophysical Apparatus GKAE)

SUBMITTED: March 16, 1962

Card 2/3

L 4230-66 EWT(m)/EPA(w)-2/EWA(m)-2 IJP(c) GS

ACCESSION NR: AT5007967

S/0000/64/000/000/0946/0949

AUTHOR: Glazov, A. A.; Kochkin, V. A.; Onishchenko, L. M.; Royfe, I. M.;  
Semenov, M. M.; Tuzov, I. V.; Shvabe, Ye.

TITLE: High-frequency system of the 700-Mev cyclotron /9

SOURCE: International Conference on High Energy Accelerators. Dubna, 1963.  
Trudy. Moscow, Atomizdat, 1964, 946-949

TOPIC TAGS: high energy accelerator, cyclotron, proton accelerator

ABSTRACT: The accelerating system of the 700-Mev cyclotron must ensure a regime of continuous proton acceleration for a current at maximum radius up to 1 milli-ampere. It is necessary here to have the maximum possible collection of energy of the accelerated protons per revolution, with the restriction that the power of the high-frequency supply to the accelerating electrodes be technically possible and economically admissible. The configuration and structure of the region where the particle acceleration occurs and the design of the accelerator electromagnet are the determining factors in the selection of the scheme for the accelerating system. The small height of the acceleration region, the absence of gap variation accord-

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L 4230-66

ACCESSION NR: AT5007967

ing to azimuth, and insignificant variation according to radius ( $2h_{\min} = 146$  mm,  $2h_{\max} = 220.4$  mm) with maximum gap in the middle radii are the special features of the accelerator under consideration; namely, a high-field machine with small variation of the magnetic field strength and large spiral. A similar structure for the operating zone excludes the use of simple bulk resonators as accelerating systems even during operation at multiple frequencies of considerable multiplicity, because the vertical dimension of the resonator must amount to about one half of the wavelength of the accelerating voltage, and the period of revolution of a proton in the cyclotron field is 83.3 nanosecond ( $f = 1/T = 12$  megahertz). It is also practically impossible to use a multi-electrode (three or more) accelerating system operating at multiple frequencies in the case of an effectively structured region where the acceleration of the protons occur. Even for operations at a frequency equal to twice the frequency of proton revolution, the radius of the accelerator turns out to be greater than a quarter of the wavelength of the accelerating voltage. Moreover it is hardly technically feasible to create a cantilever design more than three meters with supporting elements arranged in the small interpole gap, with rigid requirements upon the constancy and magnitude of the gap between the accelerating electrode and the chamber. A two-dee accelerating system with dees in

Card 2/3

L 4230-66

ACCESSION NR: AT5007967

which the proton flight angle is close to  $180^\circ$  can be realized by various methods. The Joint Institute of Nuclear Research and the Scientific Research Institute of Electrophysical Apparatus have investigated theoretically and experimentally modifications of the accelerating system with semicircular dees, which are closed in a small part of the arch near the axis of symmetry, dees that are part of the homogeneous rectangular line, and dees that are part of the rectangular line with variable wave resistance. Of all the considered possibilities of accelerating system design, the accelerating system in the form of the rectangular line with increased wave resistance outside the gap of the electromagnet possesses the optimum characteristics from the viewpoint of the magnitude of the losses, excitation, and realization of the design. The accelerated system chosen is shown in the present report to satisfy the requirements imposed upon it. The radio-engineering and mechanical designs carried out at the mentioned two institutes and the modelling of the various accelerating system elements point to the possibility of realizing its design and construction and to the expediency of selecting the indicated scheme and principal parameters. Orig. art. has: 3 figures.

ASSOCIATION: Ob'yedinennyy institut yadernykh issledovaniy, Dubna (Joint Institute of Nuclear Research)

SUBMITTED: 26May64

NO REF SOV: 000

Card 3/3

ENCL: 00

OTHER: 000

SUB CODE: NP

ROZKO, I.M.; PUPPY, O.G.; YAKOVLEV, S.S.

Effect of a longitudinal high-frequency current on the stability  
of a columnar quasi-constant discharge. Zhur. tekhn. fiz. 35  
no.3:259-265 P 1965. (MIRA 18:4)

ROYFE, I.M., kand.tekhn.nauk (Leningrad)

Transient processes in windings of multilayer pulse  
transformers. Elektrichestvo no.6:71-75 Je '60.  
(MIRA 13:7)  
(Electric transformers)

ROYFE, I.M.

Diagram for the stabilization of the horizontal portion of the  
pulse of a pulse transformer for a voltage up to 1 Mv. Prib.  
i tekhn. eksp. no.3:67-72 My-Je '60. (MIRA 14:10)  
(Pulse techniques (Electronics))



*ROYKA*

POLAND / Chemical Technology. Processing of Solid Fuels.

H-22

Abs Jour : Ref Zhur - Khim., No 12, 1958, No 40946-17

Author : Kalinovskiy, Grosman, Royka.

Inst : Not given

Title : A Method for Determining the Completion of Coking by Measuring the Electroresistance of the Coke Cake.

Orig Pub : Przedsiębiorstwo Państwowe Wyodrębnione Pol'sk patent 38123, 10.04.56.

Abstract : The method described is different from the others in that it uses the electrical resistance of the coke cake as the measuring parameter. These measurements of the electroresistance can be made directly in the coke furnace chamber by installing coal electrodes of approximately 80mm diameter, and 1200mm in length, and with an immersion depth of 700mm. In this way the completeness of the entire coke cake is evaluated rather than the separate parts.

Card 1/1

ROYKH, I.L.; KOLTUNOVA, L.N.; BELITSKAYA, S.G.; BOLOTICH, I.P.

Investigating the atmospheric corrosion of vacuum condensates of zinc by photographic, optical and weight methods. Fiz. met. i metalloved. 17 no.5:784-786 My '64. (MIRA 17:9)

1. Odesskiy tekhnologicheskii institut imeni Lomonosova.

BC

Intensity measurements in the ultra-violet with the aid of the photon counter. I. L. ROICH (Physikal. Z. Sovietunion, 1935, 8, 223-226).—The Planck-Wien formula for black-body radiation has been confirmed in the ultra-violet using Schein's photon counter. T. G. P.

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS																									
PROCESSES AND PROPERTIES INDEX																									
<p><i>ca</i></p> <p>Determination of the isochromats for the radiation of black bodies in the region 2800-3000 Å. by means of the light counter. 1. Roikh. <i>J. Exptl. Theoret. Phys.</i> (U. S. S. R.) 7, 1136-42 (1937); <i>Chem. Zentr.</i> 1939, II, 17. The light counter was found to be suitable for the accurate measurement of the radiation from black bodies. The no. of impulses for 2800, 2850, 2900, 2950 and 3000 Å. at 1513-1763° abs. temp. was detd. From the result of the measurements a value of <math>1.40 \times 10^{-17}</math> degree-cm was obtained for <math>C_2</math> of the Planck equation and a value of <math>1.771 \times 10^{-11}</math> degree-cm<sup>2</sup> for <math>h \cdot k</math>. W. A. M.</p>																									
<p>ASB 51.4 METALLURGICAL LITERATURE CLASSIFICATION</p>																									
<p>RECORD NO. 179</p>																									

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

2ND AND 4TH ORDERS

2418. Isochromatic Energy Curves for a Black Body in the Region 2800 3060 Å. I. L. Roitch. *Phys. Zells. d. Sowjetunion*, 13, 1, pp. 11-22, 1938. *In German*.—An apparatus is described for determining the isochromatic u.v. energy curves by the use of a quartz counter. Light of a given wave-length is selected by means of a quartz monochromator and is then focussed on to the light counter; the number of impulses per minute gives a measure of the energy. A black body is used as a source and the apparatus is so sensitive that it is possible to work at temperatures low enough to be measured with a thermocouple. The results are in agreement with those deduced from the Planck-Wien law. The value of the radiation constant may be derived from the results and a value of  $1430 \pm 0.007$  is obtained. [See also Abstract 4560 (1935).] H. J. H. S.

ASB-15A METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

5TH AND 6TH ORDERS

7TH AND 8TH ORDERS

9TH AND 10TH ORDERS

11TH AND 12TH ORDERS

13TH AND 14TH ORDERS

15TH AND 16TH ORDERS

17TH AND 18TH ORDERS

19TH AND 20TH ORDERS

21ST AND 22ND ORDERS

23RD AND 24TH ORDERS

25TH AND 26TH ORDERS

27TH AND 28TH ORDERS

29TH AND 30TH ORDERS

31ST AND 32ND ORDERS

33RD AND 34TH ORDERS

35TH AND 36TH ORDERS

37TH AND 38TH ORDERS

39TH AND 40TH ORDERS

41ST AND 42ND ORDERS

43RD AND 44TH ORDERS

45TH AND 46TH ORDERS

47TH AND 48TH ORDERS

49TH AND 50TH ORDERS

51ST AND 52ND ORDERS

53RD AND 54TH ORDERS

55TH AND 56TH ORDERS

57TH AND 58TH ORDERS

59TH AND 60TH ORDERS

61ST AND 62ND ORDERS

63RD AND 64TH ORDERS

65TH AND 66TH ORDERS

67TH AND 68TH ORDERS

69TH AND 70TH ORDERS

71ST AND 72ND ORDERS

73RD AND 74TH ORDERS

75TH AND 76TH ORDERS

77TH AND 78TH ORDERS

79TH AND 80TH ORDERS

81ST AND 82ND ORDERS

83RD AND 84TH ORDERS

85TH AND 86TH ORDERS

87TH AND 88TH ORDERS

89TH AND 90TH ORDERS

91ST AND 92ND ORDERS

93RD AND 94TH ORDERS

95TH AND 96TH ORDERS

97TH AND 98TH ORDERS

99TH AND 100TH ORDERS

1ST AND 2ND ORDERS										3RD AND 4TH ORDERS									
PROCESSES AND PROPERTIES INDEX																			
<p>BC</p>										<p>A 1</p>									
<p>Determination of the sensitivity of a photon counter. I. L. Rorcu (Compt. rend. Acad. Sci. U.R.S.S., 1939, 24, 687-689).—The spectral and abs. sensitivities of a Pt-H photon counter are determined, using black-body radiation and a quartz monochromator as energy source. The limit sensitivities (quanta <math>\text{cm}^{-2} \text{sec}^{-1}</math>) are given for the range 2000—3200 Å.</p> <p>L. G. G.</p>																			
<p>Dept. Physics, Cadmus Industrial Inst.</p>																			
<p>ASH-SLA METALLURGICAL LITERATURE CLASSIFICATION</p>																			
<p>GROUP 1</p>										<p>GROUP 2</p>									
<p>GROUP 3</p>										<p>GROUP 4</p>									

1ST AND 2ND GROUPS

PROCESSING AND PROPERTIES INDEX

3

Emission of photographically active particles in atmospheric corrosion of metals. I. I. Rolkh. *Doklady Akad. Nauk S.S.S.R.* 63, 119-22 (1948). The blackening effect, discovered by Colson (*Compt. rend.* 123, 40 (1890)) and later studied by Russell (*Proc. Roy. Soc.* 61, 424 (1897); 62, 102 (1898); 64, 409 (1898)) was reinvestigated as a function of time. Filings of Al, Mg, and Zn, were placed at a distance of 1 mm. from a photographic plate and were moved to new positions along the plate every 2, 4, or 24 hrs., for a total length of 10 cm. in 144-240 hrs.; the optical  $d$ .  $D$  for each position was detd. by photometry. For Al and Mg, curves of  $D$  against the time show uniform decrease of  $D$ , whereas in the case of Zn the decrease is, reproducibly, pulsating. The assumption that the emission of the photographic particles by the metal surface is linked with its oxidation in air, is substantiated by a comparison of the  $D$  curve for Al with Vernon's kinetic curve of the increase of wt. % of Al in air. A plot of  $1/W$  against the time, drawn to the same scale as the  $D$  plot, yields a curve strikingly similar to the latter. It leads to the conclusion that the rate of emission of the photographically active particles varies in the same way as the thickness of the oxide film formed in air. With time, both the growth of the oxide film and the photographic action decrease. N. Thon

ASH-35A DETALLURGICAL LITERATURE CLASSIFICATION

CA 3

Sodium photon counter. I. L. Bulkh. (Klessa Hydrometeorol. Inst.), *Zhur. Ekspl. Teor. Fiz.*, 10, 269-70 (1949). The counter consists of a glass tube filled with 20 mm. Hg, an axial W wire, and a layer of Na on the inside of the wall, produced by electrolysis of fused NaNO<sub>3</sub> in a cup surrounding the tube across the glass, under 120 v. and 5-10 ma. for 10-15 min. The photocathode is then sensitized with the aid of a glow discharge. The counter registers faintest units of visible light. The curve of the no. of impulses as a function of the voltage applied shows a 100 v.

wide plateau at around 1100 v. The no. of dark impulses is very low. N. Thon



CA

Photographic activity of mercuric chloride. I. L. Rokh. *Doklady Akad. Nauk S.S.S.R.* 70, 57-0 (1950).  
In a 40-hr. exposure in the dark, at a distance of 6 mm., with the emulsion turned toward a cup filled with a 0.1 N soln. of  $\text{HgCl}_2$ , a photographic plate showed a central solarization spot, surrounded by a ring of normal blackening. The solarization disappeared, and only uniform blackening remained, when the plate was moved to a distance of 16 mm. With solid  $\text{HgCl}_2$  placed on top of the emulsion of a lower plate, and another plate, with its emulsion turned inward, placed at a distance of a few mm. above the bottom plate, the upper plate, too, was

blackened, owing to sublimation of the  $\text{HgCl}_2$ . Blackening was observed also, at a distance of about 1 mm. from  $\text{HgCl}_2$  powder, in a 310-hr. exposure of a plate wrapped in black paper. N. Thon

CA

3

Vertical distribution of photographically active particles emitted by metals in atmospheric corrosion. I. L. Roikh, *Doklady Akad. Nauk SSSR*, 70, 231 (1950), cf. *ibid.*, 43, 2809, 44, 7651b. In order to det. the effect of different methods of surface processing upon the vertical distribution the surfaces of 1. Zn plates were removed by means of a file, a finely granular emery cloth (I), a coarsely granular I and a 10% H<sub>2</sub>SO<sub>4</sub> soln., resp. Images were taken on the same photographic plate (II) under the same conditions of temp., 80°, time of exposure, 2 hrs., and angle of inclination of II toward the metal, 25°. Photometric treatment of the results showed that the optical d.,  $D$ , depends linearly upon the distance between II and the metal plate,  $h$ :  $h, h_0 + D, D_0 = 1, h_0$  and  $D_0$  being the values of  $h$  and  $D$  at  $D = 0$  and  $h = 0$ , resp. The same slope was obtained in all 4 cases, but the magnitude of the active surface, and consequently the amt. of active particles emitted per unit time, varied with the different methods of surface processing. The same slope was also obtained when different metals (Zn, Al, and Mg) were used, while the no. of particles emitted during the expt. decreased in the order: Zn > Al > Mg. Theoretical consideration led to the derivation of the formula,  $n = n_0 \cdot D / \alpha \cdot k$ , where  $n_0$  and  $\gamma$  are no. of particles falling on II at  $h = 0$  and the contrast coeff., resp., suggesting that the vertical distribution of the emitted particles obeys the exponential law. G. Meguerian

(95)

155T82

ROYKH. I. L.

USSR/Physics - Photography  
Mercuric Chloride.

Jan 50

"Photographic Activity of Corrosive Sublimate,"  
I. L. Roykh, 3 pp

"Dok Ak Nauk SSSR" Vol LXX, No 1

Describes experiments on photographic action of vapors of corrosive sublimate solution, photographic action of corrosive sublimate in sublimation, and photographic action of corrosive sublimate vapors through filter of black paper to prove corrosive sublimate must be included among the number of substances having photographic

155T82

USSR/Physics - Photography (Contd)

Jan 50

activity. Similar experiments with calomel showed it did not possess photographic activity. Submitted by Acad A. N. Terenin 22 Sep 49.

155T82

ROYKH, I. L.

PA 160T84

USSR/Physics - Corrosion, Atmospheric

11 May 50

"Relation Between Temperature and Liberation of Photoactive Particles During Atmospheric Corrosion of Magnesium and Zinc," I. L. Roykh, F. E. Mazayev, 4 pp

"Dok Ak Nauk SSSR" Vol LXXII, No 2

Expresses opinion that kinetics of separation by some metals of photographically active particles is similar to kinetics of atmospheric corrosion and therefore may serve as characteristic of corrosive process. Attempts to establish regularities in influence of temperature on emission of photoactive particles liberated by magnesium and zinc during atmospheric corrosion.

160T84

ROYKH, I. L.

FR 24214

USSR/Chemistry - Photochemistry

Nov 52

"Characteristic Curve of the Effect Produced in a  
Photoemissive Layer by the Action of Metals" I. L.  
Roykh, Odessa Inst of Engs of the Milling Industry  
imeni I. V. Stalin

"Zhur Fiz Khim" Vol 26, No 11, pp 1573-1576

The author obtained characteristic curves due to the  
action of metals on photosensitive layers. These  
curves show a field of underexposures, a field of  
normal exposures, and solarization. The presence of  
a photometric interval is the basis for conducting  
quant photographic research with metals.

242T4

82872

S/120/60/000/02/003/052

21.2200

AUTHORS: Zeytlenok, G.A., Zinov'yev, L.P. and <sup>EQ32/E314</sup>Royfe, I.M.

TITLE: High Voltage Supply for the Deflecting Plates in the  
Ion Beam Injection System of the 10 GeV Synchrophasotron/9

PERIODICAL: Priory i tekhnika eksperimenta, 1960, Nr 2,  
pp 16 - 20 (USSR)

ABSTRACT: The present paper was originally communicated to the  
All-Union Conference on High Energy Particles in 1956  
(Refs 1 and 2). In the 10 GeV synchrophasotron, the  
proton beam is directed onto the equilibrium orbit by a  
system of five deflecting plates (Figure 1). Mechanical  
displacement of the plates and the voltage across each  
pair can be adjusted so that the beam can be directed  
onto an orbit of any radius in the accelerator chamber.  
The voltage across the plates can be between 20 and 100 kV.  
In order to eliminate the effect of the electrostatic  
field between the plates on the particle trajectories  
outside the injection process, the voltage is removed  
from the plates in 0.5  $\mu$ sec. The form of the voltage  
applied to the plates is shown in Figure 2. The  
reduction in the voltage takes place at the rate of

Card1/3

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S/120/60/000/02/003/052

E032/E314

High Voltage Supply for the Deflecting Plates in the Ion Beam  
Injection System of the 10 GeV Synchrophasotron

about  $2 \times 10^{11}$  V/sec and is obtained by using a large number of hydrogen thyratrons in parallel with the plates. In order to maintain a constant voltage during the injection process, a sufficiently large capacitor is connected across the deflecting plates. The magnitude of this stabilizing capacitor was determined from the condition that the relative reduction of the voltage during the injection time (about 300  $\mu$ sec) should not exceed 0.5%. The final value for this capacitor was 0.01  $\mu$ F. At the maximum pulse repetition frequency, the power required to charge this capacitor is 0.5 kW. Since it is inconvenient to use capacitors greater than 0.01  $\mu$ F (because of the increased power), the high voltage rectifier was not used at the ordinary mains frequency. Instead, a supply frequency of 100 kc/s was employed. A block diagram of the installation is shown in Figure 3. It consists of a master oscillator (100 kc/s) and an aperiodic preliminary amplifier. The latter is followed by a cascade multiplier. A detailed circuit of the

Card 2/3

82872

S/120/60/000/02/005/052

E032/E314

High Voltage Supply for the Deflecting Plates in the Ion Beam  
Injection System of the 10 GeV Synchrophasotron

high-voltage supply is shown in Figure 4. The system can be used to maintain a voltage across the plates to an accuracy better than  $\pm 0.02\%$ . Figure 5 shows the change in this voltage as a function of time for four of the deflecting plates. Acknowledgment is made to the following persons who took part in the experiments:  
N. Boyko; G.A. Ivanov; A.N. Semenov; I.I. Finkel'shteyn;  
A.A. Tsepelev; S.K. Yesin and N.A. Chubaro.  
There are 5 figures and 2 Soviet references:

SUBMITTED: February 25, 1959

Card 3/3



ROIKH, I. L.      SHCHERBAK, A. I.

Particles

Kinetics of the emission of a photographically active particles in the  
atmospheric corrosion of aluminum during a brief period of time.  
Zhur. fiz. khim. 26 no. 12, 1952

9. Monthly List of Russian Accessions, Library of Congress, May 1953. Unclassified.

3  
2  
Photographically active particles generated by metals during atmospheric corrosion. L. L. Roikh and D. M. Rafalovich. Doklady Akad. Nauk S.S.S.R. 90, 603-6 (1953); cf. C.A. 47, 5788f.—Expts. were undertaken to det. whether metals have the same reduction-oxidation action on photographic emulsions as does  $H_2O_2$ . Other photographically active substances which were examd., e.g.  $HgCl_2$  and  $Na_2HAsO_3$ , gave results different from those of  $H_2O_2$  and metals. The expts. support the assumption that metals liberate  $H_2O_2$  during atm. corrosion. C. B.

ROYKH, I. L.

USSR/Chemistry

Card 1/1

Authors : Roykh, I. L., and Shcherbak, A. I.

Title : The charged state of photo-active particles emitted by metals during atmospheric corrosion

Periodical : Zhur. Fiz. Khim., 28, Ed. 5, 769 - 771, May 1954

Abstract : Experiments were conducted to determine whether photo-active particles emitted from metals during atmospheric corrosion are electrically charged. A constant electrical field, produced by dry cell batteries with a potential difference of 700 v, was used in the detection of the photo-affect. Results showed that these particles are not charged because the mean value of the optical density of the photo-layer blackening, exposed to the effect of the metal, remained constant within certain error limits. Ten references: 4-USSR, 2-German, 2-English, 1-French and 1-Italian since 1905. Drawing.

Institution : Institute of Engineers of the Flour Milling Industry, Odessa

Submitted March 21, 1953

*evaluation B-83976*

ROYEKH, I. L.

62 ✓ The composition of the photographically active particles evolved by metals during atmospheric corrosion. I. L. Roëkh. *Doklady Akad. Nauk S.S.S.R.* 94, 1117-20 (1954); cf. *C.A.* 49, 6072h. —A freshly cleaned surface of Mg, Al, Zn, and some other metals, in immediate contact with a photographic emulsion or at a distance of up to 1 in. from it, has an actinic effect similar to light of an extremely low intensity. Since the phenomenon has not yet been satisfactorily explained, an exptl. study of it was undertaken. A photographic plate was treated with  $H_2O_2$  or a metal plate. The photographic plate was exposed to a spectrum of light either previous or subsequent to  $H_2O_2$  or metal-plate treatment. The change of optical density was detd. The exptl. method is fully described. The curves show a max. photographic sensitivity at a wave length of around 6500 Å. Subsequent tests, with  $H_2O_2$  substituted by  $Na_2AsO_3$  or  $HgCl_2$ , showed the photographic sensitivity increased with increasing wave length, but did not reach a max. It was concluded that the metal surfaces set  $H_2O_2$  free during atm. corrosion, which causes the change of pl. ographic sensitivity noted.

W. M. Sternberg

ROYKH, L.

✓ Highly sensitive reaction for hydrogen peroxide. *L. L. Roykh (Technol. Inst., Odessa). Zhur. Anal. Khim. 11: 700(1966).*—A photographic plate is treated with  $\text{S}_2\text{O}_8^{2-}$  to remove  $\text{AgBr}$ . The plate is then immersed for 2–3 min. in equal vols. of 0.8%  $\text{K}_4\text{Fe}(\text{CN})_6$  and 0.4%  $\text{FeCl}_3$  and dried. When a plate thus prepd. is exposed to an aq. soln. of  $\text{H}_2\text{O}_2$  blue spots darker than the rest of the plate will appear. Evolution of  $\text{H}_2\text{O}_2$  in atm. corrosion of metal was detected by this method. *M. Hosen.*

*ROYKH, I. L.*

USSR/Corrosion - Protection From Corrosion.

J.

Abs Jour : Referat Zhur - Khimiya, No 9, 1957, 33157

Author : Roykh, I. L.

Inst : Academy of Sciences USSR

Title : Composition of Photographically Active Particles Emitted by Metals During Atmospheric Corrosion.

Orig Pub : Dokl. AN SSSR, 1956, 108, No 6, 1102-1105

Abstract : As a continuation of prior work by the author, on emission of photographically active particles during atmospheric corrosion of some metals, it was ascertained, by comparison of photographic layer curve, on action of Zn, Mg and vapor of an aqueous solution of  $H_2O_2$ , that in the case of Zn and Mg these particles are molecules of  $H_2O_2$ , the concentration of which decreases in accordance with the exponential law with increasing distance from the

Card 1/2

USSR/Corrosion - Protection From Corrosion.

Abs Jour : Ref Zhur - Khimiya, No 9, 1957, 33157

J.

surface of the metal. The experimental procedure is described for a direct detection of the action of  $H_2O_2$  on the photographic plate.

Card 2/2

L 24831-65 EWT(m)/EWA(d)/EWP(t)/EWP(b) IJP(c) JD/WB

ACCESSION NR: AP4049489

S/0020/64/159/002/0413/0415

AUTHOR: Roykh, I.L., Koltunova, L.N., Tolkachev, V.Ye. Kirichenko, V.P.

TITLE: Investigation of atmospheric corrosion of variable-composition vacuum condensates of the Mg-Zn system

SOURCE: AN SSSR. Doklady\*, v. 159, no. 2, 1964, 413-415

TOPIC TAGS: magnesium zinc condensate, atmospheric corrosion, magnesium alloy, zinc alloy, alloy corrosion, alloy hardness

ABSTRACT: Atmospheric corrosion of alloys of the Mg-Zn system was evaluated by a combination of two rapid methods: (1) vaporization of metals in a vacuum of  $5 \times 10^{-5}$  mm Hg to give variable-composition condensates, and (2) a photographic method (darkening of photo film by  $H_2O_2$  liberated during atmospheric corrosion). A plot of the number of  $H_2O_2$  molecules vs. composition of the Mg--Zn system shows minimum corrosion close to the eutectic point (50-60% Zn) and maximal corrosion for  $MgZn_2$ . Corrosion curves of massive alloys were similar but of low value. Aging improves the anti-corrosion properties of condensates, natural aging being more effective than annealing for compositions with over 70% Zn. Annealing was most effective for those containing less than 70% Zn. Growth of

Cord 1/2



L 24831-65

ACCESSION NR: AP4049489

the oxide film and evolution of  $H_2O_2$  are related, thus making possible the use of the photographic method. Microhardness curves increase up to about 80% Zn and then drop sharply. An alloy with 50-60% Zn is comparable to Zn in corrosion resistance, has a specific gravity of about 2.8 and a microscopic hardness 7 times as great as Zn. Orig. art. has: 4 figures.

ASSOCIATION: Odesskiy technologicheskii institut im. M. V. Lomonosova (Odessa Technological Institute)

SUBMITTED: 04Jun64

ENCL: 00

SUB CODE: MM

NO REF SOV: 005

OTHER: 000

Card 2/2

ROYKH, I.I.

A high-sensitivity reaction for hydrogen peroxide. Zhur. anal.  
khim. 11 no.6:755 N-D '56. (MLBA 10:6)

1. Odesskiy tekhnologicheskii institut.  
(Hydrogen peroxide)

ROYKH, I. L.

*Water* ✓ The effects of heating photosensitive films exposed to the action of metal oxidized in the air and in hydrogen peroxide vapors. I. L. Roikh (I.V. Stalin Technol. Inst., Odessa). *Zhur. Fiz. Khim.* 30, 954-6 (1956); cf. *C.A.* 49, 13865. The effects of metals on photosensitive films was previously attributed to  $H_2O_2$  formed when the metal was oxidized in the air, and a latent image is produced when the metal is placed in contact with the film. A subsequent heating of the film increases the sensitivity of the test. The method may prove of value in the investigation of photoactive substances, and may, in particular, be used in the kinetic studies of atm. corrosion of metals. The d. of the image is greatly increased (over 4 times) by raising the temp. from 70 to 100° for 10 min. The film was developed for 3 min. at 16°.

W. M. Sternberg

ROYKH, I. L.

composition of photographically active particles evolved by metals at atmospheric corrosion, I. L. Roykh (V. Stalin Inst. Technol. (Mosc.) Doklady Akad. Nauk S.S.S.R., 108, 1102-5 (1958)) cf. C.A. 45, 6889g, 49, 13865e.

In the previous work, the photoactive particles formed upon metals during oxidation were found by indirect methods to consist of  $H_2O_2$ . More convincing direct results are here described, obtained by comparison of the blackening of iso-ortho photographic plates by oxidized Mg and Zn (any other photographically active metal could be used) with the blackening of the plates with  $H_2O_2$  vapors. The  $H_2O_2$  concn. was adjusted to blacken the photographic plate to the same d. in the same length of time as the metal oxides tested. The plates, after exposure, were heated for 10 min. at  $100^\circ$  and cooled before development by the usual means, which was found to greatly increase the plate sensitivity. The oxidized metal plate was placed directly on the photographic plate emulsion. The tests were made at  $18^\circ$ , with an air humidity of 80%. The logs of the exposure time of the Zn surface and 0.3%  $H_2O_2$  vapors, or of Mg and 0.2%  $H_2O_2$ , were plotted against the image d., and the points fell accurately upon the same curve. Similarly, the effects of heating the photosensitive layer to a definite temp. after the exposure to the action of oxidized metal and the  $H_2O_2$  vapors also fall on the same curve (straight lines). The exponential law expressing the vertical distribution of the evolution of photographically active particles (C.A. 45, 8341f) found previously was confirmed by special tests with Mg and  $H_2O_2$ , comparing the intensity of darkening by a wedge-shaped oxidized Mg specimen kept

for 10 min. above a photographic plate and by arranging the plate at an angle to the  $H_2O_2$  surface.

W. M. Sternberg

27 18 6  
Kinetics of hydrogen peroxide separation at an early stage of the atmospheric corrosion of metals. I. L. Roikh (U. V. Stalin Inst. Technol., Odessa). Doklady Akad. Nauk S.S.S.R. 111, 372-6 (1958). The method used in the present kinetic study of  $H_2O_2$  evolution was described in C.A. 50, 10641g. The evolution during the first 16 sec. was studied with a Mg ring continuously rotated 0.1 mm. below a photographic plate; for a given time, the plate was heated to 100° for 10 min. to intensify the image, and developed for 2 min. at 20°. The Mg surface was continuously cleaned during the exposure. A modification of the procedure was used in studying exposures of 1-8 min.; Zn, Mg, and Al plates were cleaned with emery, placed on the photographic plate, exposed 1 min., recleaned and replaced on the same location on the plate, and the process was repeated until the desired exposure was obtained. The photographic plate was then treated as above. The image intensity  $n$ , proportional to the no. of  $H_2O_2$  particles evolved during the time  $t$ , was found to lie on a straight line in the expression  $n^x = at + b$ , where  $a$  and  $b$  are consts., and  $x = 1.24$  in the 1st set of expts., and 2 in the 2nd. For exposures extending over days a logarithmic relation between  $t$  and  $n$  is applicable.

W. M. Steinberg

ROYKH, I.I.

A new photographic method for investigating the corrosion of metals in the early stages [with summary in English]. Zhur.fiz.khim. 31 no.9:1959-1963 S '57. (MIRA 11:1)

1. Tekhnologicheskii institut im. I.V. Stalina, Odessa.  
(Corrosion and anticorrosives)  
(Photography--Scientific applications)

ROYKH, I.L. (Odessa); RAFALOVICH, D.M. (Odessa)

Production of  $H_2O_2$  by metals as a criterion of atmospheric corrosion  
[with summary in English]. Zhur. fiz. khim. 31 no.12:2733-2738 D '57.  
(MIRA 11:4)

1. Odesskiy tekhnologicheskii institut im. I.V. Stalina.  
(Zinc--Corrosion) (Aluminum--Corrosion) (Hydrogen peroxide)

AUTHORS: Roykh, I.L., Rafalovich, D.M.

76-12-20/27

TITLE: Separation of  $H_2O_2$  by Metals as Criterion of Atmospheric Corrosion  
(Vydeleniye  $H_2O_2$  metallami kak kriteriy atmosferno korrozii).

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1957, Vol. 31, Nr 12, pp.2733-2738 (USSR)

ABSTRACT: The effect of the decrease of optical density for the investigation of the temporal dependence of the  $H_2O_2$  separation by metals after purification, as well as for the comparison with the data obtained with the investigation of the kinetics of corrosion according to the weight method was applied here. The tests showed that the amount of this effect depends on the exposure time of the preceding exposure. For investigating this dependence, strips parallel to each other of one and the same photographic plate at constant illumination were exposed during various times. Subsequently, a newly cleaned zinc rod was fixed on the photographic layer vertical to these strips. The optical densities  $D_1$  (there, where the metal was), and  $D$  (of the remaining part of the plate) were measured for each strip after developing and the  $\Delta D$ , the decrease of optical density, was computed. The investigations showed the same course of the curves for the action of metal and  $H_2O_2$ . This proves that the effect of a decrease in optical density on the newly cleaned metal depends on the separation of hydrogen

Card 1/2



Separation of  $H_2O_2$  by Metals as Criterion of  
Atmospheric Corrosion

76-12-20/27

peroxide at atmospheric corrosion. Curves for the separation of hydrogen peroxide by newly purified aluminum and zinc were plotted for the intervals from 1 up to 10 days. These curves plotted photographically coincide with those for the increase of the thickness of the layer of oxide, which were obtained by Vernon Refs.6-7 according to the weight method. It is shown that various equations which express the dependence with respect to time of the separated quantity of hydrogen peroxide, or of the thickness of the layer of oxide respectively, correspond to the various stages of metal oxidation. The tests were carried out at  $20^{\circ}C$  and a relative humidity of from 65 to 75%. From the obtained data results that a parabolic relation of the form  $n^2 = k_3 t + k_4$  exists with an interval of from 1 to 24 hours from the beginning of oxidation. The analogous tests within the interval of from 1 to 10 days showed a logarithmic course of the dependence of the form:  $n = k_5 \lg t + k_6$ . There are 7 figures, and 7 references, 4 of which are Slavic.

ASSOCIATION: Odessa Institute of Technology imeni I.V.Stalin (Odesskiy tekhnologicheskii institut im. I.V.Stalina).

SUBMITTED: October 5, 1956

AVAILABLE: Library of Congress

Card 2/2

ROYKH, I.I.; BOLOTICH, I.P.

Vertical distribution mechanism of  $H_2O_2$  over solutions. Dokl.  
AN SSSR 120 no. 1:116-118 My-Je '58. (MIRA 11:7)

1. Odesskiy tekhnologicheskii institut im. I.V.Stalina. Predstavleno  
akademikom A.N.Frumkinym.

(Hydrogen peroxide)  
(Solution(Chemistry))

ROYKH, I.L.; RAFALOVICH, D.M.

Double replacement phenomena in the action of freshly polished metals on photosensitive layers. Ukr. khim. zhur. 24 no. 2:198-201 '58. (MIRA 11:6)

1. Odesskiy tekhnologicheskii institut im. Stalina, kafedra fiziki.  
(Metals--Corrosion)  
(Photographic chemistry)

76-32-5-29/47

AUTHOR: Roykh. I. L.

TITLE: Chemical Proof of the Formation of  $H_2O_2$  on the Atmospheric Corrosion of Metals (Khimicheskoye dokazatel'stvo obrazovaniya  $H_2O_2$  pri atmosferno korrozii metallov)

PERIODICAL: Zhurnal fizicheskoy khimii, 1958, Vol. 32, Nr 5, pp.1136-1142 (USSR)

ABSTRACT: In the beginning all papers carried out in the photographic field related to this theme are mentioned with the name of the author and the theme of investigation being given; in this connection it is pointed at the big variety of hypotheses concerning the photographic effect of metals. With respect to the chemical investigation of the same theme also a survey of literature on the same subject is given; it is mentioned that until now no investigations of the formation of hydrogen peroxide on ordinary atmospheric corrosion have been carried out. The present paper developed from the evaluation of the contribution by the author at the electrochemical seminary of the MGU on January 23, 1954; in this connection the author expresses his acknowledgement to A. N. Frumkin,

Card 1/3